PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/GB98/03742	14/12/1998	12/12/1997

International Patent Classification (IPC) or national classification and IPC
B63G13/00

Applicant
MILLENNIUM INNOVATIONS LTD. et al.

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☒ Certain defects in the international application
   - VIII ☒ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
12/07/1999	28.03.00

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB98/03742

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

3-8	as originally filed			
1,2,2a	as received on	17/03/2000	with letter of	13/03/2000

Claims, No.:

1-11	as received on	17/03/2000	with letter of	13/03/2000

Drawings, sheets:

1/6-6/6	as originally filed

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims 1-11
	No:	Claims
Inventive step (IS)	Yes:	Claims 1-11
	No:	Claims
Industrial applicability (IA)	Yes:	Claims 1-11
	No:	Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Point V

1. Closest prior art (D1: FR-A-2 734 350) discloses an immobiliser that is chuted to the water surface and that contains a filament with a mine at its extreme. The subject matter of claims 1 and 11 differs therefrom in that the flexible fouling element is wounded around an inflatable member which is disposed in a housing before being triggered.

   Article 33 (2) PCT is met.

2. The objective problem of the prior art is that the filament provides merely one vertical line with feasable propeller interception of the vessel to be destroyed. On the other hand, the feature of claims 1 and 11 referring to the wounding of the flexible fouling element around an inflatable member that is deployed in use, implies a larger interception field which results in a more efficient immobilisation. Besides, the subject matter of the claims is directed to an inflatable device that is deflated when not being deployed; this also entails the enlargening of the interception range.

   The features mentioned above constitute an improved, non destructive immobilisation device for preventing and deterring unauthorised boarding to a vessel, for which there is no reference in the prior art.

   Article 33(3) PCT is met.

3. Claims 2-10 are dependent on claim 1.

Point VII

1. Independent claim 11 is not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

2. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Point VIII

1. It appears that in order to render clearer the subject matter of the claim and to bring it in accordance with the description, the inflatable device should have been described in terms of its form and extension when inflated.

IMMOBILISER DEVICE

The present invention relates to an immobiliser device for a vehicle locomotive by water such as, for example, a boat or ship.

Security is a constant concern for the crew of a vessel at sea. There have been several reported incidents of the unauthorised boarding of vessels at sea by thieves from another vessel.

It is an object of the present invention to obviate or mitigate the aforesaid problem and improve the security of a sea-faring vessel.

According to a first aspect of the present invention there is provided an immobiliser device for immobilising a vehicle locomotive by water, the device comprising a housing in which there is stored, in an unextended state, an elongate flexible fouling element which, in use, is designed to foul the propeller and/or motor of a target vessel, means for automatically ejecting the fouling element from the housing and means for ensuring the fouling element is maintained in an extended state once ejected from the housing.

The invention improves security by allowing the crew to take action to inhibit the motion of an approaching vessel if they have reason to feel threatened. The immobiliser device is cast into the water in the path of the approaching vessel so that the propeller is engaged by the fouling element. The device can also be used to immobilise a fleeing vessel for whatever reason.

A weight may be conveniently attached to the fouling element so that in use the drag force of the water on the weight ensures that the fouling element is maintained in an extended state. This increases the chances of the fouling element engaging and fouling the propeller.

The fouling element is preferably supported by an inflatable member, which is stowed in or adjacent the housing in a deflated condition, the device further comprising a source of compressed gas releasably connected to the inflatable member in the housing and for inflating the inflatable member so that it floats on water, the inflatable member having, in an inflated condition, the elongate flexible fouling element disposed therearound.

Preferably there is provided a valve between the source of compressed gas and the inflatable member, the valve being opened so as to allow inflation of the inflatable member by removal of a pin from the housing.

At least part of the fouling element may be configured into a net construction and may be supported by support members that extend from the inflatable member.

The housing may contain more than one inflatable member, each member being connected to a common supply of compressed gas.

The housing may comprise a capsule that is designed to be launched from a launch cylinder. Preferably the capsule has a nose that forms the source of compressed gas.

The inflatable member may be stored in the deflated condition in the form of a wound coil.

In a preferred embodiment the fouling element is attached to a projectile member that, in use, is discharged from the housing so as to carry the fouling element out of the housing. The projectile member is designed to float on the water.

According to a second aspect of the present invention there is provided an immobiliser device comprising at least one inflatable member around which is disposed an elongate flexible fouling element, the inflatable member being stored in an deflated condition and connected to a source of compressed gas via a gas distributor, and a valve in the gas distributor that is openable to allow communication between the source of compressed gas and the inflatable member.

Specific embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic representation of the inflatable member of the present invention shown in the inflated condition;

Figure 2 is a diagrammatic plan view of a vessel showing the location of the immobiliser device of the present invention;

Figure 3 is a sectioned side view of a schematic representation of a housing of the immobiliser device;

CLAIMS

1. An immobiliser device for immobilising a vehicle locomotive by water, the device comprising a housing in which there is stored, in an unextended state, an elongate flexible fouling element which, in use, is designed to foul the propeller and/or motor of a target vessel, means for automatically ejecting the fouling element from the housing and means for ensuring the fouling element is maintained in an extended state once ejected from the housing.

2. An immobiliser device according to claim 1, wherein a weight is attached to the fouling element so that in use drag force of the water on the weight ensures that the fouling element is maintained in an extended state.

3. An immobiliser device according to claim 1 or 2, wherein the fouling element is supported by an inflatable member, which is stowed in the housing in a deflated condition, the device further comprising a source of compressed gas releasably connected to the inflatable member in the housing and for inflating the inflatable member so that it floats on water, the inflatable member having, in an inflated condition, the elongate flexible fouling element disposed therearound.

4. An immobiliser device according to claim 3 wherein there is provided a valve between the source of compressed gas and the inflatable member, the valve being opened so as to allow inflation of the inflatable member by removal of a pin from the housing.

5. An immobiliser device according to claim 3 or 4, wherein the inflatable member is stored in the deflated condition in the form of a wound coil.

6. An immobiliser device according to any one of claims 3 to 5, wherein the housing contains more than one inflatable member, each member being connected to a common supply of compressed gas.

7. An immobiliser device according to any one if claims 1 to 6, wherein at least part of the fouling element is configured into a net construction.

8. An immobiliser device according to claim 7, wherein the net construction is supported by support members that extend from the inflatable member.

9. An immobiliser device according to any preceding claim, wherein the housing comprises a capsule that is designed to be propelled from a launch tube.

10. An immobiliser device according to claim 9, wherein the capsule has a nose that contains the source of compressed gas.

11. An immobiliser device according to claim 1 or 2, wherein the fouling element is attached to a projectile member that, in use, is discharged from the housing so as to carry the fouling element out of the housing.

12. An immobiliser device comprising at least one inflatable member around which is disposed an elongate flexible fouling element, the inflatable member being stored in an deflated condition and connected to a source of compressed gas via a gas distributor, and a valve in the gas distributor that is openable to allow communication between the source of compressed gas and the inflatable member.